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## ERGOT AND ERGOTISM.

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The unusual amount of ergot upon several of the very common and important wild forage grasses of the state makes it highly important that a note of warning should be sent out to the stockmen, giving a short statement in regard to the nature of ergot and the injurious results which follow the feeding of hay that is badly affected.

### NATURE OF ERGOT.

There is a parasitic fungus known as *Claviceps purpurea* that grows upon many different species of grasses and produces at one stage in its development black or purple enlarged spurs which take the place of the kernel or seed in the grass head. These spurs are called sclerotia or "ergots," and are simply aggregates of the vegetative body of the fungus, which remain dormant over winter and serve

to reproduce the fungus the following spring. The original grass seed is entirely replaced by the fungus in the formation of these ergots, and poisonous principles are developed. When hay or grass containing any considerable quantity of these ergots is eaten by stock, the injurious effects described in the following pages may result.

### HOSTS.

The grasses which are most affected with ergot in this state are the wild rye- and wheat-grasses. There are eight different species of

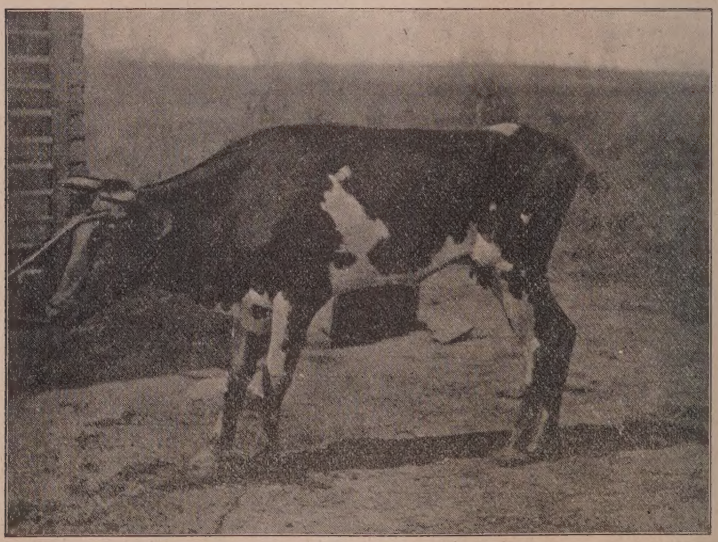

FIG. 1.— Ergotized cow.

rye-grass in the state and several of these are important forage grasses. The appearance of the ergot on the common rye-grass (*Elymus canadensis*) is shown in figure 2. The wheat-grasses are even more important and widely distributed than the rye-grasses and are especially susceptible to the ergot. The western wheat-grass (*Agropyron occidentale*), which is the most important of the nine

species present in the state, is very liable to be affected. The appearance of the ergots on this species is shown in figure 3. Hay which consists largely of wheat- and rye-grasses may contain as high as 5 or 6 per cent of ergots by weight. Single heads of these grasses may produce from one to as high as forty ergots. Other grasses, such as timothy, blue-grass and brome-grass, are also attacked by the ergot, but only occasional reports have been received of the presence of the fungus on these species. It is very common on rye in European countries but in this country rye is less liable to attack. It is highly probable that the wheat- and rye-grasses mentioned above are responsible for the majority of cases of ergotism.

### PREVALENCE AND DISTRIBUTION.

During the past few years the increased rainfall has been especially favorable for the development and spread of the ergot, and the amount has been gradually increasing. One correspondent writes, "There is more than ten times as much as I have ever seen before." Also from observations made by the writers there can be little doubt that ergot is very abundant in nearly all parts of the state.

During the winter of 1901 the loss of live stock from eating ergotized grain was very great in many counties. The loss was distributed all over the state, some localities suffering more than others. It is on account of the severe loss experienced by the farmers and stockmen during the winter and spring of 1901 that this timely warning is given, so that the farmers and stockmen who notice that their grain is badly infected can prevent the occurrence of this trouble among their stock.

### LIFE-HISTORY OF THE ERGOT FUNGUS.

In order to understand the methods to be adopted in checking the spread of ergot, it is important to know the life-history of the organism. Several different stages in the life of the fungus may be noted, as follows:

1. *The sclerotium stage.*—The dark horny spurs or "ergots" are characteristic of this stage. Unless the affected grasses are cut for

FIG. 2.—Common wild rye (*Elymus canadensis*). All affected with ergot. Those on the right have been considerably dwarfed by the growth of the fungus.

hay these all finally fall to the ground and remain dormant over winter.

2. *The spore-fruit stage.*—Shortly before the blossoming period of the grasses, these ergots produce several short erect stalks with globular heads. In these globular heads an immense number of slender thread-like reproductive bodies or spores are produced. These are carried to the blossoms of the grasses and infect the young ovaries.

3. *The sphacelia stage.*—The young ovary is soon completely infested by the filaments of the fungus, and a second kind of spore is formed. At this stage a sweetish liquid is secreted which attracts insects. The insects carry the spores from flower to flower and thus cause the rapid spread of the disease if the climatic conditions are favorable. The fungus grows throughout the ovary and completely destroys it and finally produces the sclerotium, or ergot, thus completing the life-history.

### PREVENTION.

By pursuing proper methods much can be done to check the spread of the ergot and also to make the infected grasses safer for feed. If grasses that are susceptible to the ergot are cut early in the season or about flowering time, the ergots will not be formed. Hay which is cut at this stage is not poisonous to live stock, and the spread of the fungus to other wild or cultivated plants will be materially checked. Hay lands on which ergots have been matured may be burned over with some profit as some of the sclerotia will be destroyed. If the ergot-producing grasses along roadsides and other waste places are cut several times each season, much good will also be accomplished. Finally, the seed of susceptible grasses should be examined for ergots, as the disease may be spread from infected seed.

### SYMPTOMS.

The poisonous effect of ergot seems to appear in the late fall and winter and we may find many cases during the winter and early spring, due to the *continuous feeding* of hay and straw that is heavily charged with the ergot fungus. Animals may lose parts of their tail or

FIG. 3.—Western wheat-grass (*Agropyron occidentale*). Heads badly affected with ergot.

ears, or their hoofs may slough off. In others we may see only gangrenous sores. These may be seen on the teats or on the mouth. The most frequent lesions are those of loosening of the hoofs so that parts of the sole or wall may shed or slough off. We find this trouble more in cold than in warm weather, but this is not always the rule.

Cattle may also abort from eating forage that is heavily charged with ergot. Ergot acts on the nervous system and on the circulation. It is, however, not always true that large doses of ergot will produce abortion.

The symptoms are not very marked in the early stages. In advanced cases there is local gangrene of the mucous membrane. The extremities, such as the ears, tail, and lower part of the limbs, begin to gradually lose their warmth and sensibility, dry gangrene sets in, and the parts harden and become mummified, and finally drop off without pain.

TREATMENT.

As a preventive measure the fields should be examined to see if they contain any ergots, as shown in figures 2 and 3. It is absolutely necessary to warn the farmers and stockmen against feeding this ergotized grain to their stock in winter, as it acts more rapidly and destructively in cold weather. Fields in which great quantities of ergot are found should not be cut for hay or pastured.

Medicinal treatment is not satisfactory in animals where the hoofs have sloughed off, on account of the time it would take to grow on a new hoof. This would incur a great deal of expense and sometimes more than the animal is worth. Where part of the tail or ears has dropped off, treatment can be used, such as cleaning the part with carbolic acid and then treating it as an ordinary wound, and discontinuing the feed that contains ergot, so that no more animals will become poisoned.